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Sonic Boom:
A Review of Six Decades of Research

Sonic booms generated by aircraft traveling at supersonic speeds have been the subject of extensive aeronautics research for over 60 years. Hundreds of papers have been published that document the experimental and analytical research conducted during this time period. The purpose of this presentation is to provide a brief overview that covers the experimental and analytical aspects of sonic boom generation, propagation and prediction. Aircraft maneuvers, sonic boom minimization, simulation techniques and devices as well as human, structural, and other responses to sonic booms are also discussed. The geometry and boom characteristics of various low-boom concepts, both large civil transports and smaller business-jet concepts, are discussed. Finally, an assessment of civilian supersonic overland flight is provided that highlights the need for continued research and a low-boom demonstrator vehicle. The studies referenced in this presentation have been drawn from over 500 references.

Domenic J. Maglieri graduated from the University of Pittsburgh in 1951 with a Bachelor of Science (BS) degree Mechanical Engineering/Aeronautical Engineering (ME/AE) and began his professional career at the National Advisory Committee for Aeronautics (NACA) Langley Aeronautical Laboratory (now NASA Langley Research Center). He has over 60 years of experience in noise control and measurements on subsonic and supersonic aircraft, rotorcraft, and vertical/short take-off and landing vehicles. He retired from NASA in 1986 and joined Eagle Aeronautics as Director for Projects. He is considered one of the leading national and international experts on sonic booms. His sonic boom flight test involvement began in 1957 and has continued for over a half century. During his 35-year career with NACA/NASA and 28 years with Eagle Aeronautics, he has participated in every major sonic boom flight-test program and has authored or co-authored over 160 publications, 100 of which are on sonic boom. He is a Fellow of the Acoustical Society of America, a board certified member of the Institute of Noise Control Engineering, and an Associate Fellow of the American Institute of Aeronautics and Astronautics.

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